

# AMERICAN RAILROAD JOURNAL, AND MECHANICS' MAGAZINE.

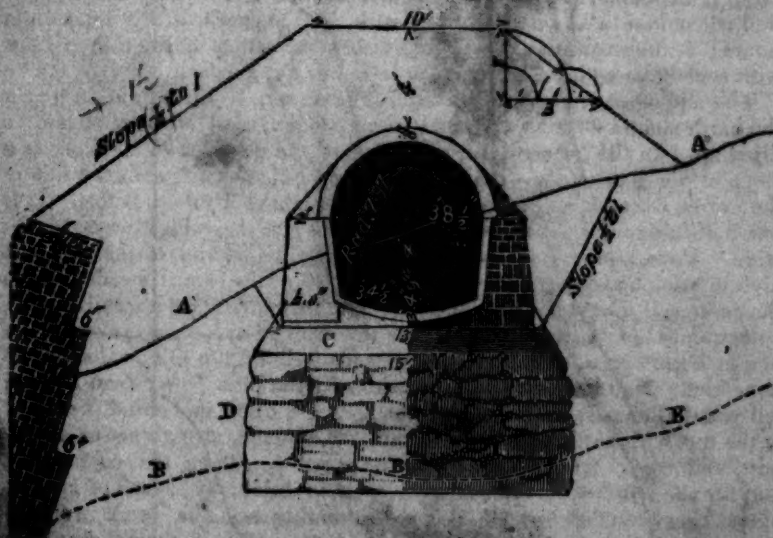
No. 1, Vol. II.]

JANUARY 1, 1839.

[Whole No. 395:  
Vol. VIII.]

THE following communication from a young friend, to a non-professional relative in this city, contains so good an account of the Croton Aqueduct that we solicited a copy for publication. To young engineers and novices in the profession, this account will be highly interesting, as containing a description of the every day work, and explanations of terms in constant use.

## *Description of the Mode of Constructing the Croton Aqueduct.*



The materials used are good building stone, of the proper degree of hardness and durability, free from all metals, particularly iron—gneiss is preferred to any other, both because it is more plentiful and more easily worked. Some limestone is also used, but not until it has the express

permit of the Resident Engineer. Brick is the next material; it is required to be from the centre of the kiln, such as is thoroughly burnt, free from lime or any other impurity, and to possess a clear ringing sound when struck. The worst accepted are such as cost from \$5 to \$7 a thousand. Next is the cement, from which the concrete and masonry generally are formed. The Commissioners' specifications are very explicit relative to the manufacture of this article, requiring that the name of the manufacturer should be known; that the cement shall not have been made more than six months before being used; that it shall be transported from the factory in water-tight casks; and, in addition to all this, that each parcel or cargo received shall be thoroughly tested, either by officers appointed for the purpose, or by the Resident Engineer himself. These are the principal materials, stone, brick, and cement. The stone is required to be always clean, and in hot weather, kept wet, and when laid in the wall requiring mortar, it must "swim" in the cement—that is, when the stone is lifted up from its bed, no point or surface of the stone must touch the one below it, each stone must be surrounded by cement. When the weather is hot, the top of the wall must be kept moist, and in cold weather all the masonry must be covered so effectually, as to protect it perfectly. The brick must be laid true and even, allowing  $\frac{3}{4}$  of an inch joint, or thereabouts. In hot weather, they are to be soaked in water, and to be kept wet while being laid. The cement is mixed in different proportions, according to the work required. For stone work, the proportions are one part of cement to three of sand, (the sand to be of medium size, sharp grained and clean—river sand is accepted.) For brick-work, the proportions are one of cement to two of sand; for concrete, one part of cement, three of sand, and three of clean building stone, broken about as fine as that used for Macadamizing. Concrete is used for forming artificial foundations, is mixed with as little water as possible, and when laid in any part of the work, is left undisturbed forty-eight hours; at the expiration of this time it has become so hard, that a blow with a pickaxe will not break it—it becomes quite a rock.

The aqueduct, maintaining a uniform descent, requires that in places the earth should be cut away, and in crossing vallies that they should be filled up. In the former case, the sides of the cut are left standing at a slope of one-half to one—that is, if the perpendicular height of the side of the cut be 6 feet, it will fall off from directly above its base 3 feet. It is one-half horizontal to one vertical. The base of the cut is always 13 feet wide. Pegs, showing the bottom of the side walls, and of the reversed arch in brick are given by the engineers, who, at the same time, determine the centres, if necessary, from these data. The builder lays a small layer of concrete, at least three inches, whose top shall be as high as the top of the peg just set—on this concrete he proceeds to build the side walls of the aqueduct. You may see the dimensions by the plan better than I could tell you. The side walls being done, they are filled in behind them, up to the top, with earth, to prevent strain or damage, also to act as a support, and cover up the work as fast as possible. Then the concrete is laid for the bottom of the reversed arch in brick, by means of moulds placed every ten feet apart. When thoroughly set, the brick work is commenced. Selecting the best brick (and it has all been most thoroughly inspected) the reversed arch is laid, and then the "brick-facing"—that is, facing the inside of the wall with brick, when carried up to the top of the wall. The upper arch, consisting of two ring courses (with occasional headers) is thrown; the arch is covered with a thick coating of

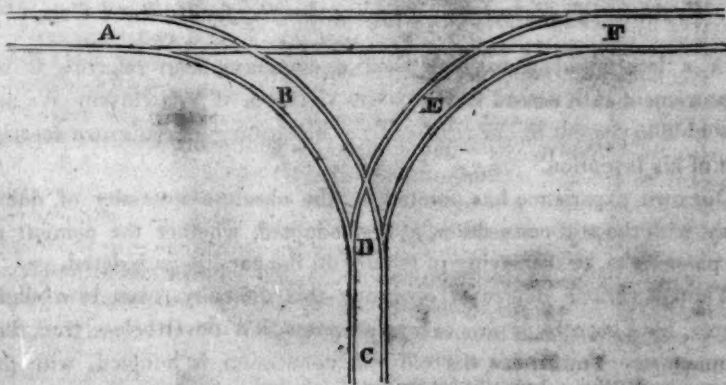
plaster, and the angle made by the top of the wall and arch, filled with the same kind of masonry as the side walls—the aqueduct is done.

You will perceive it to be a long brick vault stretching from New-York to Croton—ascending at the rate of 13 inches in a mile. The earth removed in the excavation is then “back-filled” over the aqueduct until it is 4 feet deep over the crown of the arch, level on top, and 10 or 8 feet wide, and the sides slope  $1\frac{1}{2}$  to 1, (as you see in the figure). When the ground is too steep, a “protection wall” is introduced, (see drawing); this is laid dry, i. e., without mortar, and made to slope one-half to one, as in the drawing, or one to one, at an angle of  $45^\circ$ . So much for the aqueduct in “open cutting in earth.” When a valley is crossed, a heavy wall fifteen feet wide on top, with sides sloping one-twelfth to one, must be built. They are large stones firmly embedded in small broken ones; On the top of this wall, a foot of concrete is placed, the aqueduct, as usual, is built *on that*. As water passes through vallies, a stone passage way, called “culvert,” is made of suitable dimensions.

In the above plan, I have endeavoured to show the aqueduct in “earth cutting,” and on the “foundation wall.” By a little observation you will distinguish the characteristics of each.

The plan proposed by Mr. Holcomb, as a substitute for the ordinary turn-table, appears to be worthy of consideration. In many situations its advantages over the ordinary mode would be very great; and it possesses one of the finest attributes of railroad and machine improvement—simplicity.

#### New Turning-Table.



Washington Co. Geo. January 5, 1839.

GENTLEMEN—Having been led, by the objections attending the running of locomotives backwards, or with their driving wheels in front, to consider some method of turning them and their trains more efficiently than the common turning-table, which only admits of one or two cars being turned at a time, and having devised a plan which would, I think, effect this desirable end, I take the liberty to solicit for it your kind attention.

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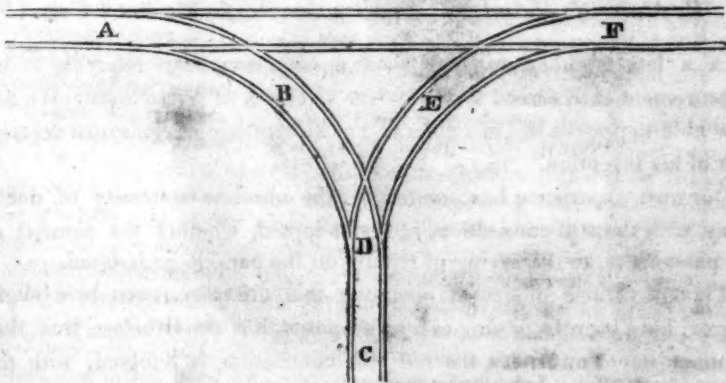
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GENTLEMEN—Having been led, by the objections attending the running of locomotives backwards, or with their driving wheels in front, to consider some method of turning them and their trains more efficiently than the common turning-table, which only admits of one or two cars being turned at a time, and having devised a plan which would, I think, effect this desirable end, I take the liberty to solicit for it your kind attention.

That locomotives do not run as well backwards as forwards, will, I think, be readily conceded. That the liability to run off the rails, and that the wear of the driving wheels is much increased, has been proved, upon a road which has come under my observation, beyond the shadow of a doubt.

The plan would, I think, be found simple and effective. The saving of time and manual labor would, I doubt not, be found to be considerably over the common turning-table, and at the same time it would be found to answer very well the purpose of turnouts at water stations. The preceding diagram will explain the plan in question.

Let us now suppose the track laid and provided with switches at the intersections, and a locomotive, with a train of cars behind it, at A. It moves over the first half of the turning track, B, (which is the quarter of a circle) and stops at C, where the track is made straight for 150 or 200 feet, or for the purpose of receiving or discharging freight quite out of the way, the straight line may be extended to any convenient length. The switch is then changed at D, and the locomotive, with its train moves backwards, over the other half of the turning-track, E, into the main trunk at F, thus having been turned completely around.

That additional room would be required, is true. By adopting, however, a radius of curvature for the turning-track of 400 feet, which would be quite sufficient, and making 150 feet at B, straight, the whole distance out from the main trunk would be but 550 feet.

Yours, respectfully,

F. B. HOLCOMB,

Assistant Engineer Central Railroad.

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*P. Alverson's Patent Spiral Spring Drafts, for Railroad Cars.*

In a late number, we published a communication referring to an improvement in Railroad Cars, by Mr. Alverson, of New Haven. We are now able to present to our readers a cut illustrating Mr. A.'s own description of his invention.

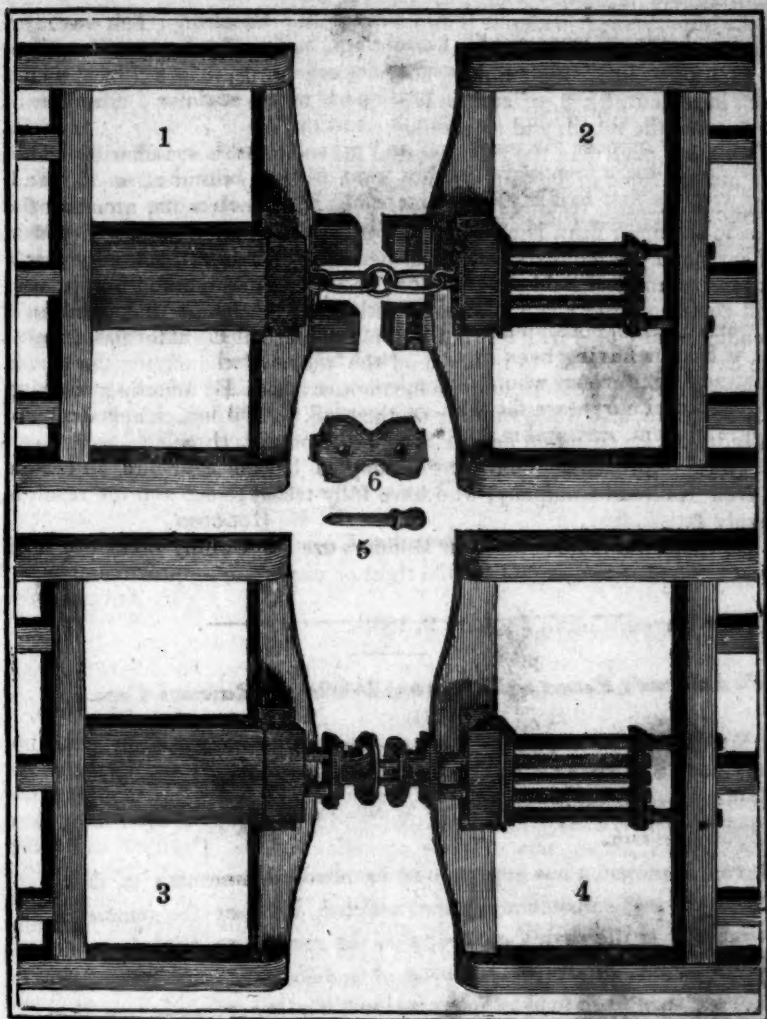
Our own experience has pointed out the absolute necessity of doing away with the stiff connection, at first adopted, whether the comfort of the passengers, or the saving of repairs on the cars, is considered.

Though various modes of obviating this difficulty, even in a slight degree, have been from time to time proposed, it is, nevertheless, true, that on many important roads the old stiff connection is adopted, with the single improvement of the substitution of wood for iron—though even this is not found in all cases.

It is now to be hoped, then, when an improvement so highly approved of as that of Mr. Alverson's, is brought to public notice, it will come into general use.

The wooden link appears to be preferred to the iron one, and is therefore an improvement on the plan first suggested.

We hope that after this, we shall not hear of these unpleasant jerks—one of the greatest sources of nuisance in Railroad travelling—and the more reprehensible, because they can so easily be remedied.



I hereby give notice, that I have invented a new and useful improvement in the mode or method of attaching Railroad Cars to each other, and to the moving power; and have obtained letters patent of the United States, to secure the same to me and my assigns. The object of my improvements is to prevent the jerk usually experienced on the first movement of connected cars, and the shock occasioned by the concussion when suddenly stopped.

My improvements consist substantially in interposing elastic chains, or spiral spring drafts on the front and rear of each car connected together, (whether with one or two bumpers.) When used with one bumper,

which I prefer, the spring drafts are made to operate each way, to soften the jerk of the forward motion, and also by reaction to check the recoil. Their forms may be seen by the drawings at the head of this notice. Figs. 1 and 2, my first plan, with hooks, chains, and two bumpers, one showing the rods and springs, the other enclosed in a box. Figs. 3 and 4, the improvement with one bumper operating the springs each way, and the cars at rest. The elastic chains of the several cars may be attached to each other by a single link or bar of iron; but I prefer a link of wood, seen in the cut, fig. 6, of sufficient strength to sustain the forward draft or to resist the recoil, and so shouldered in the single bumper as to admit of no more play than the curvatures of the road requires, and will yield to the oblique force of the leading cars, when suddenly thrown from the road. The advantages resulting from these last improvements, are, that the elastic spring or draft is made to operate easily with a light or heavy train of cars, and the bumpers may be dispensed with; the machinery is less expensive and less liable to get out of order than any method now in use, and costs but little when compared with its advantages; the operation is steadier, is attended with less noise, is much more pleasant for passengers; the cars are less liable to injury, and the mode of connecting the cars is much safer from accident, and the locomotive is assisted thereby in starting a heavy train, also while running on the road. All of which appears more fully in my specification accompanying the patent.

These improvements have been adopted by the Hartford and New Haven Railroad Company, who have fully tested them, and the result is highly satisfactory.

Railroad Companies and Car Builders are respectfully invited to send their orders, or to contract for the right or use of my improvements.

P. ALVERSON.

New Haven, Conn., January 9, 1839.

#### RECOMMENDATIONS.

*New Haven, Jan. 5th, 1839.*

Mr. P. ALVERSON: Sir,—I have watched the progress of your improvements in manufacturing the Spiral Spring Draft and Bumpers for Railroad Cars, with great interest, from the time you commenced your experiments, and take great satisfaction in stating, that after more than two months' experience of their operation on the Hartford and New Haven Railroad, they appear to be decidedly the best of all the various expedients hitherto used to move the twitch at starting, and the concussion at stopping a train of cars. They entirely relieve the passenger from any unpleasant shock, they save the cars from any racking jar, they enable the engine to start with a perfectly gradual, and constantly accelerated motion, until under full headway, and in my opinion, they will, by their easy and comfortable operation upon the cars, save their entire cost in a very short period.

Your obedient servant,

SAMUEL J. HITCHCOCK,

*President of the Hartford and New Haven Railroad Company.*

#### TO WHOM IT MAY CONCERN.

Mr. P. ALVERSON has been employed by the Hartford and New Haven Railroad Company for the last two years, at building carriages for their road, during which time he has invented a very useful improvement for connecting a train of Railroad carriages, which he terms "*the Spiral Spring Draft.*"

This improvement has been thoroughly tested for two months past, on the road under my charge, both with light or heavy trains, or passenger and freight carriages; and I have no hesitation in saying, that it far exceeds any connection with which I am acquainted. The whole arrangement is very compact, of cheap construction, and, I doubt not, of great durability. I am confident, could its utility be properly appreciated, it would be universally adopted by all Railroad companies in this country.

JOHN T. CLARK,

*General Agent of the Hartford and New Haven Railroad Co.*  
New Haven, January 7th, 1839.

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*New Haven, December 12th, 1838.*

Mr. P. ALVERSON: Sir,—Having fully tested your Spiral Spring Draft and Bumpers, on the Hartford and New Haven Railroad, I take pleasure in saying the improvement is a good one. They operate well, and are of far more importance than can be conceived of by those who have not watched their operations. Having for three or four years past, seen the bad effect of the stiff draft on other roads, upon cars and passengers, I would most cheerfully recommend them to all Railroad companies and car builders, as the best plan now in use: they operate better, and are less liable to get out of order, than any plan I have ever seen. I hesitate not in saying that they will soon pay any Railroad company, in the wear and tear of cars, to make the alteration, and apply them where the stiff draft is used; they are not only a good thing to ease the jerk in starting and stopping, which injures the cars and affects the passengers, but assists the engine much in starting a heavy train. It also is a good thing where horse power is used; it is injurious to a horse to be twitching and jerking at a stiff draft.

I think much of your improvement upon the first, by making the springs operate both ways, and the single bumper. It is much safer for cars and passengers, by the connecting link of wood, in case of accident.

Yours, with respect,

WILLIAM F. HARDY,

*Engineer and Superintendant of the Motive Power of the H. and N. H. Railroad.*

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*New Haven, December 12th, 1838.*

Mr. P. ALVERSON: Sir:—I have had the pleasure of using and testing your Patent Spiral Spring Draft for cars, on the Hartford and New Haven Railroad; which, with the single bumper operating upon the springs each way, is most admirably adapted to do that for which they are designed.

The cars move off, when steam is applied, without the jerk usually experienced on other roads. It not only saves the cars and passengers from a terrible jerk, but gives the engine more power over a heavy train of cars in starting. In a train of ten cars it permits the engine to move six feet before they all are in motion. I perceive the springs yield gradually, each doing their duty through the train without a jerk. It is an exemplary improvement, and worthy the attention of all Railroad companies, even if they have the elliptic springs, to make the change, and much more where the stiff draft is used. I think them to be more durable, and operate better than any plan I have ever seen, and can see no reason why they may not be speedily and universally adopted, for the good and safety of cars, passengers, and the locomotive.

Yours, respectfully,

C. R. WOOLSON, *Engineer.*

*Internal Improvement in the State of New-York.*

We take great pleasure in laying before our readers that portion of the Message of Governor Seward, which relates to the subject of Internal Improvement.

The recommendation in regard to a Board of Improvement is one deserving of consideration. It has long been felt, that an organization, embracing the general system of Railroads as well as of Canals, was necessary to the successful execution of our public works.

The Message, from the great length to which it was necessarily extended, does not refer to the subject of Internal Improvement in a manner sufficiently distinct.

In addition to the three great lines mentioned as most important, one is to be found in that connecting the cities of New-York and Albany, through our Eastern counties. The bearing of this line upon the general interest, is well developed in the report of Mr. Johnson on the New-York and Albany Railroad, published in this number. To this, we might add the Long Island Railroad, forming a connecting link of the greatest importance. This Road would prove an artery of a valuable member of our body politic.

The general necessity of a well digested system of improvement, is now more than ever apparent.

That such a system can only be carried into effect by the organization of a Board of Improvements, as proposed by the Governor, or by some similar arrangement, has long been evident.

We annex the proceedings of the State Convention in 1835, in which such a plan was developed, for the first time, in the resolutions then presented by Mr. Bloomfield.

It will be an easy matter to apportion the aid the State may think proper to give to public works, when a definite system shall have been agreed upon: A definite system will be found necessary, as a basis for all future operations; and the sooner it is determined, the better it will be.

The rank which our State holds in the Union, is only dependant upon her own exertions; and she herself is to determine the question of advancement or retrogression.

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*Extracts from Governor Seward's Message.*

Thirteen years' experience has proved the inadequacy of all our thoroughfares for the transportation of persons and property between the frontier and tide waters. It is submitted whether sound policy does not require that the enlargement of the Erie Canal be completed as speedily as will be consistent with the public convenience. This generation may as well participate in its manifold advantages as resign them. The loss of interest upon partial expenditures during a long term of years, is an

item not unimportant; and the expenses of transshipment and other inconveniences resulting from the navigation of different parts of the canals with boats of different forms and magnitude, are auxiliary arguments to prove that the public interest requires the earliest feasible enjoyment of the cheapness and expedition of the improved navigation.

The year 1838 has been signalized by the momentous confirmation of the highest hopes excited by the successful application of steam power to the propulsion of boats. But this wonderful agent has achieved almost unobserved, a new triumph, which is destined to effect incalculable results in the social system. This is, its application to locomotion upon the land. Time and money are convertible. Husbandry of the one is economy of the other, and either is equivalent to the economy of labor. Railroads effect a saving of time and money: and notwithstanding all the incredulity and opposition they encounter, they will henceforth be among the common auxiliaries of enterprise. Happily, it is not in our power to fetter the energies of other States, although we may repress our own. This useful invention, like all others, will be adopted by them, although it gain no favor with us; and they who are willing that New York shall have no railroads, must be ready to see all the streams of prosperity seek other channels, and our State sink into the condition of Venice, prostrate and powerless, among the monuments of her earlier greatness.

A glance at the map would render obvious the utility of three great lines of communication by railroads, between the Hudson river and the borders of the State. One of these would traverse several of the northern counties, and reach with its branches to Lake Ontario and the St. Lawrence. A second, keeping the vicinity of the Erie canal, would connect Albany and Buffalo. A third would stretch through the southern counties, from New-York to Lake Erie.

It is certain that neither one nor two of these improvements would accomplish the useful ends of all, and when the growing wealth and importance of the several regions directly interested in these improvements are considered, it is not less clear, that however delayed, all must eventually be completed. It remains, then, to be decided whether it is wiser to regard them as rival enterprises, each by the operation of local jealousies hindering and delaying the others, or whether all shall be considered as parts of one system, and equally entitled to the consideration and patronage of the State.

Capitalists have conceived not only the usefulness, but the productiveness of the central route, and notwithstanding the adverse influences of the recent pressure, have accomplished one-half of the whole undertaking. The public defence may some time demand, and the public convenience already requires, as great a reduction of the distance as possible, between our commercial metropolis, the capital of the State, and the populous cities and long line of flourishing villages of the west.

The attention of far-seeing and patriotic citizens was early directed to the route through the southern counties. That enterprise has been commenced and prosecuted by an association with commendable perseverance, under circumstances most embarrassing, resulting not only from the same commercial revulsion, but also from the magnitude of the undertaking, which exceeds that of any work of internal improvement ever completed, except the Erie canal. Legislative aid, in the form of loans, has been granted to both the central and southern roads.

I earnestly hope that you will inquire into the condition and prospects of both of these undertakings, and bestow a careful examination upon

the conduct, management and resources of the associations engaged in their construction; and, assuming the principle that there is neither economy nor wisdom in procrastination, adopt such measures as will secure their completion without delay.

The advantages and claims of the various projects of the northern line, including those of two distinct and entire routes, are yet under discussion. The whole subject merits, as I doubt not it will receive, your dispassionate consideration. I have only to add, in regard to this improvement, that I know no reason for delay when the most feasible and advantageous plan is ascertained. I shall cheerfully concur in any measures you may adopt to secure to that flourishing and hitherto neglected part of the State, an early and full participation in the benefits of our system of internal improvements.

I have called your especial attention to three great projects of improvement, because their routes, extending from the borders of the State to tide water, are obviously designed to accommodate large and important divisions of our population; and to open to the reach of labor and capital extensive regions of the State which, whatever may be their present prosperity, have scarcely begun to disclose their resources. They are important parts of a system of public defence which it is wise to have always in view, and certain to become thoroughfares of the boundless internal trade to be carried on with the western States and British America. They are, therefore, works of great importance to the whole State, and entitled to be regarded as arteries in that great system of internal improvements which an enlightened and prophetic vision of the future wealth, and resources, and relations of the State would have suggested, while its solitudes were yet untrodden by civilized man. They deserve to be classed with those parts of the same great system already completed, or in process of construction—the Erie and Champlain, the Oswego, the Seneca and Cayuga, the Chenango and Chemung, the Genesee Valley and the Black River Canals; and if their completion cannot speedily or advantageously be effected otherwise, like them they ought to be constructed at the expense of the State.

Nature, never jealous of her co-operation, supplies us with resources and facilities, but presents few of her works finished for our immediate use. Thus she leaves us incentives to invention, and scope for action, while she seldom fails to indicate the right direction for effort. The policy of our State is so legibly written upon its surface, that to err in reading, or to be slothful in pursuing it, is equally unpardonable. The ocean reaches through the tide waters of the Hudson far inland. The lakes and reservoirs within our bounds, as well as the seas upon our borders, were designed to fill the artificial channels we have constructed as tributaries to our noble river. It is a policy even more obvious to maintain the natural uses of the river itself, and to perfect every feasible branch of its navigation. This is only to secure a natural and free circulation in the heart, while we are diffusing it to the extremities of the system. I congratulate you upon the success which attends the efforts of the General Government in removing the obstructions in the vicinity of Albany. The prosecution of this enterprise, although carried on by that Government, will constantly deserve, and perhaps may, as heretofore, require your attention. I respectfully commend, as a part of the same policy which devolves peculiarly upon the State Legislature, the improvement of such of the northern branches of the Hudson as are capable of being rendered navigable. The settlement of the public lands of the

State would be facilitated, and large portions of our fellow-citizens accommodated by this improvement.

There are other projects, both of railroads and canals, of less magnitude, many of which, however, embrace wide and important interests, and whose accomplishment would largely promote the public convenience, and advance the public good. It would be invidious to discriminate among these projects, in a communication which does not admit the discussion of their merits. Internal improvement regards the highest possible cultivation of every part of the State, and the perfect evolution of its resources; the widest possible extension of the territory which can be made tributary to its markets, and the greatest possible diminution of the cost of transportation of persons and property; and consequent increase of population and labor, and the diminished cost of production. All such improvements, therefore, rightfully engage the public attention, and will doubtless receive from the Legislature the discriminating favor due to their respective merits.

Taxation for purposes of Internal Improvement is happily unnecessary, as it would be unequal and oppressive. The founder of the system had always in view its prosecution to the full extent, consistent with the physical formation of the State, although the invention of Railroads was unknown or partially understood by him; and consequently the manner in which the system was to be carried forward was unforeseen. He asserted most truly, that the argument for such a system, was not a mere question of dollars and cents—that its revenues were unimportant, compared with its more general, more enduring, and more beneficent results; the continual advance, by millions, in the value of real estate; the increase in quantity and value of agricultural productions and manufactured fabrics; the establishment and enlargement of inland commerce, and the swelling of foreign trade; economy in the expense, saving of time, and increase in amount of travel; augmentation of population; the unbounded prosperity and increase of rising villages, cities and towns; and all the consequent advantages to morality, piety, and knowledge. But he maintained that independently of all these results, the interests of the State, in regard to the mere question of revenue, required the prosecution of the system. Freely conceding that there must be parts which would not immediately, and some which would never yield a revenue equal to the cost of their construction, he maintained that they might yet be admitted as tributaries to the greater channels; and that the aggregate revenues of all would defray the entire cost of construction, and yield a surplus large as the munificence which a republican government ought to bestow upon institutions of charity and education. It is history now, that these enlarged and comprehensive views were by no means generally sustained; that his magnanimous efforts to enlarge the wealth, promote the happiness, and elevate the fame of his native State, were resisted by a policy which regarded his glowing anticipations as visionary, and the entire system fraught with intolerable taxation and ruin; that his antagonist policy early became ascendant, and the several enterprises since undertaken have been hard-worn triumphs over the prevalent convictions of the Legislature.

Fortunately this momentous question is decided. The present resources and credit of the State, show that the most ardent advocates of the system failed altogether to conceive the vast tribute which it has caused already to flow into the treasury.

I respectfully refer you to a report of a committee of the last House of Assembly, in which this subject is discussed with eminent ability, and

which results in shewing that the canals are a property substantially unincumbered; and that their productiveness would warrant the State in expending in Internal Improvements \$4,000,000 annually, during a period of ten years; and that the revenues of the Canals alone would reimburse this expenditure previous to the year 1885. This sum far exceeds any estimate of expense required to complete the entire system; while it is not to be doubted that the parts yet to be constructed, will eventually be productive of revenue. The conclusions of this report, although of vast interest to the State, and, I trust, decisive of its policy, have not been questioned.

The following is a brief statement of the entire indebtedness of the State at the close of the last fiscal year:

## DEBT OF THE GENERAL FUND.

Loaned at 5 per cent., Astor stock,	\$561,500 00
Loaned at 5 per cent., Bank Fund,	586,532 43
Loaned of the Canal Fund, without interest,	890,000 00
<b>Total debt of the General Fund,</b>	<b>\$1,948,932 43</b>

## CANAL DEBT.

Erie and Champlain Canal Debt,	\$711,314 12 at 5 per cent.	458,520 53 at 6 per ct.
Oswego Canal,	421,304 00	
Cayuga and Seneca Canal,	237,000 00	
Chemung,	316,000 00	
Crooked Lake,	120,000 00	
Chenango,	2,362,535 65	
Black river Canal,	591,446 10	
Genesee Valley Canal,	2,000,000 00	
Enlargement of the Erie Canal,	1,000,000 00	
<b>Total of the 5 per cent.,</b>	<b>\$8,750,599 88</b>	
<b>Total of the 6 per cent.,</b>	<b>\$548,520 53</b>	
	8,759,599 88	
		9,308,120 41
<b>Total State Debt,</b>		<b>\$11,256,152 84</b>

But there is a surplus on hand sufficient to pay the

Erie and Champlain Canal debts,	\$2,259,834 65
There was on hand on the 30th September last,	
of the money borrowed for the Chenango canal,	36,801 21
The Black river canal,	490,282 77.
Genesee valley canal,	1,740,546,95
	<b>\$2,267,630 93</b>

	\$4,527,465 58
<b>Balance of State debt over funds on hand,</b>	<b>6,728,687 26</b>

It will be noticed that the temporary loans made by the Comptroller, to meet the current demands, do not enter into this statement; nor do the State stocks issued to sundry Railroad companies, in pursuance of the laws passed at the last session of the Legislature. The issue of these stocks is regarded as a loan of the credit of the State upon undoubted security.

The construction of the canals of this State has been carried on chiefly with funds derived from loans. The whole amount borrowed is about fifteen millions; the balance of the debt for their construction is less than five millions; and the Erie and Champlain canal fund alone, it has been seen, yields a nett revenue, after paying all legitimate charges upon it, and all deficiencies of the auxiliary canals, of \$1,650 91.

History furnishes no parallel to the financial achievements of this State. It surrendered its share in the national domain, and relinquished for the general welfare all the revenues of its foreign commerce, equal generally to two-thirds of the expenditures of the federal government. It has, nevertheless, sustained the expenses of its own administration, founded and endowed a broad system of education, charitable institutions for every class of the unfortunate, and a penitentiary establishment, which is adopted as a model by civilized nations. It has increased four-fold the wealth of its citizens, and relieved them from direct taxation; and in addition to all this, has carried forward a stupendous enterprise of improvement, all the while diminishing its debt, magnifying its credit, and augmenting its resources.

This cheering view of our condition ought to encourage neither prodigality of expenditure, nor legislation of doubtful expediency. All appropriations for the purposes of Internal Improvement ought to be made with a view and constant purpose to call into co-operation individual capital and enterprise. Rigid economy ought to be enforced, and perfect accountability exacted in this, as in every other department of the public service.

Action is the condition of our existence. Our form of government chastens military ambition. The action of the people must be directed to pursuits consistent with public order and conducive to the general welfare. Our country will else be rent by civil commotions, or our citizens will seek other regions, where society is more tranquil, ambition enjoys greater freedom, enterprise higher motives, and labor richer rewards.

We are required to carry forward the policy of Internal improvements, by the abounding experience of its benefits already enjoyed; by its incalculable benefits yet to be realized, by all our obligations to promote the happiness of the people, to multiply and raise their social enjoyments, to maintain the fame of the State, inestimably dear to its citizens; to preserve the integrity of the Union, and by the paramount duty we owe to mankind, to illustrate the peacefulness, the efficacy, the beneficence and the wisdom of Republican Institutions.

That legislation is unwise which is exclusively devoted to enterprises of great moment, and overlooks measures of obvious, but common utility. The present condition of our highways has resulted from the necessity of constructing roads over an extended surface, with the scanty means and efforts of a sparse population. But this inconvenience has in a great measure ceased to exist. The labor expended upon our highways is a grievous tax, and yet our roads are scarcely improved. The summer repairs accomplish little more than restoring them to the condition they maintained before the injuries of the winter season occurred. The evil lies in a misapplication of the labor assessed. Your experience in regard to this subject, is sufficient to convince you of the necessity of reform, as well as to suggest the most effectual measures for its accomplishment.

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The aggregate of loans made for the construction of canals now in progress, is \$2,615,182 84, to wit, for the Black River Canal \$613,076 29, and for the Genessee Valley Canal \$2,002,106 55. There have been

paid on account of the construction of these canals \$334,352 12, to wit, for that of the former \$122,993 52: for that of the latter \$261,559 60; and there remains on deposit in the banks, drawing an interest of five per cent. (equal to that on the loans) the balance \$2,230,829 72.

It is respectfully submitted, that more perfect responsibility would be secured if the term of office of Canal Commissioners should be limited so as to bring them periodically before the appointing power, retaining the provision for their removal at earlier periods, if the public interests should require. Of the \$1,481,602 canal tolls received, \$104,645, about one-fourteenth part is expended in payment of Inspectors, Clerks, Collectors, and Tenders of Locks. And the sum of \$639,714, almost one-half, is consumed in these payments and repairs. It scarcely admits of doubt, that the system is capable of such revision as would reduce these heavy expenses, and proportionally increase the nett revenues of our canals. The compensation of the Superintendents and Collectors ought to be fixed by law, instead of being left to the pleasure or caprice of the Canal Commissioners, or the Canal Board.

With the extension of our internal improvements, there has been an immense and unlooked-for enlargement of the financial operations and the official power and patronage of the Canal Commissioners and the Canal Board. These operations are conducted, and this power and patronage exercised and dispensed with few of those requirements as to accountability and publicity enforced with scrupulous care in every other department of the government. So inconsistent and unequal are the best efforts to maintain simplicity, uniformity and accountability throughout the various departments, that a greatly mysterious and undefined power has thus grown up unobserved, while the public attention has exhausted itself in narrowly watching the action of more unimportant functionaries. It is a proposition worthy of consideration, whether greater economy and efficiency in the management of our present public works would not be secured; a wiser direction given to efforts for internal improvement throughout the State, and a more equal diffusion of its advantages be effected by constituting a Board of Internal Improvements, to consist of one member from each Senate district. This board might be divided into two classes, the term of one of which should expire annually. It should discharge all the duties of the present Canal Board; should audit all accounts, have the general superintendence of the Canals, and all other public works, with powers of investigation in regard to those in which the State has an interest by loan or otherwise; report upon all special applications for surveys or aid, and annually submit a detailed statement of its proceedings of the Legislature. It is the worst economy to devolve upon officers constituted for one department, duties appurtenant to others. Its universal results are diminished responsibility and diminished efficiency in both the principal and incidental departments.

The aggregate of tolls, including rents of surplus water, collected on all the canals during the last fiscal year, was \$1,481,602 41. The cost of repairs and of the collection of tolls on all the canals was \$639,714 32, which deducted from the receipts, leaves the nett proceeds from tolls, for the year, \$841,888 09. The cost of repairs and collection during the last year exceeds that of the previous year \$30,806 59. The nett revenue of the last fiscal year exceeds that of the preceding \$123,085 25.

The income of the Erie and Champlain canal fund from all sources, including the interest on \$2,259,834 65, (the sum set apart to pay the remainder of debt contracted on account of the Erie and Champlain canals)

is \$1,553,136 34. Of this amount there have been expended as follows: For repairs of the canals \$443,053 64: of which were expended by superintendents of repairs \$365,661 95, and by the Canal Commissioners \$83,396 69; for interest on the debt \$129,374 05, and sundry payments \$26,892 65, leaving the surplus revenue of the canal fund for the last year \$947,811 50.

The Canal Commissioners have expended in the last fiscal year for the enlargement of the Erie Canal \$1,161,001 80. They borrowed under the act of April 18, 1838, including the premium, \$1,005,050, leaving an excess of expenditure over the amount loaned of \$155,951 80, which was paid from the surplus, and leaves the nett surplus of the Erie and Champlain Canal fund, after paying all charges, \$791,859 70.

The amount of tolls collected on all the lateral canals is \$58,264 76. This amount exceeds the aggregate of the preceding fiscal year \$12,979 58, and falls short of that of the year which ended on the 30th September, 1836, before the navigation of the Chenango Canal, \$2,531 42. The deficiency in the income of all the auxiliary canals to meet the expenses of repairs and of collection of tolls, and the payment of interest on the debt contracted for their construction, is \$220,160 59; which amount, deducted from the aforesaid nett revenue of the Erie and Champlain canal fund, leaves the nett revenue of that fund, after paying all charges upon it, and the deficiencies of all the auxiliary canals \$562,699 11.

The deficiencies of the several lateral canals are as follows: Of the Cayuga and Seneca Canal \$15,517 62; of the Crooked Lake \$10,37 55; of the Oswego 54,460 70; of the Chemung 29,833 11, and of the Chenango \$119,311 61. The aggregate of tolls collected on all the canals during the last fiscal year exceeds that of the previous year by the sum of \$154,821 51, and falls short of that of the fiscal year which ended on the 30th September, 1836, \$120,173. But the tolls collected on all the canals during the season of navigation in the year 1838, exceed those of the same season in 1837, by the sum of \$297,555, or 23 per cent. Of this excess \$130,788 97, or 44 per cent., is upon ascending, and \$166,766 03, or 56 per cent., upon descending freight. This estimate is made upon data which may be assumed as substantially correct, although it is to be understood as not precisely accurate. This comparison, while it demonstrates the severity of the pressure which has recently visited our State, not only furnishes cheering evidence of returning prosperity, but gives assurance of the constantly increasing productiveness of our System of Internal Improvements.

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*Proceedings of the State Convention in 1835.*

Joseph E. Bloomfield, in behalf of the committee of ten, appointed at the previous sitting of the Convention, then made their unanimous

REPORT.

Whereas, the growing interests of this State require the timely provision of means to give efficient aid to the development of the resources of our vast interior: And whereas, it is important that information on the subject be collected and disseminated among the people of this State: And whereas, it is believed, that we have among us public spirited citizens, willing to devote an adequate portion of their time to promote plans which would be calculated more rapidly and effectually to realise the vast resources which are yet but partially brought into action; therefore,

Resolved, That it is recommended to form a *State Society for the Promotion of Internal Improvements*, and that this Convention, at its adjourned meeting, adopt means to organize the same: the duty of which society shall be, to collect and diffuse such information as may be deemed of public utility. The society shall consist of a member from each county in this State, who shall appoint such officers and agents, and adopt such by-laws and regulations, as they may deem necessary.

Resolved, That to enable the society to execute its functions, each county in this State be requested to form therein a *County Society of Improvement*, which Society shall, at its stated meetings, propose plans of public utility to the State Society, and shall raise such sums by subscriptions, as the friends of Internal Improvements may find it proper to subscribe, to defray every expense incidental to carry into effect the operations of the State Society, and to remit the amount of such funds to the Treasurer thereof.

Resolved, That the State Society petition Congress to appropriate means to improve the Atlantic and Lake frontiers of this State, for naval and commercial purposes.

Resolved, That it is earnestly recommended to the people of this State, to take early measures for the construction of a Ship Canal around the Falls of Niagara, by an application to the State Legislature, or Congress.

Resolved, That the members of Congress from this State, be requested to urge upon the consideration of that body the propriety of allowing foreign goods to be transported across the territory of the United States, under proper regulations, to the provinces of the Canadas.

Resolved, That in carrying out the views of this Convention, all local and sectional jealousies should be deprecated, and that the people of this State owe it to themselves to direct their combined energies to the speedy completion of all the great works of Internal Improvement, tending to facilitate the intercourse between the different sections of this State with each other and with the other States.

It was then Resolved, That the report be laid on the table for the consideration of the Convention at their adjourned meeting, and the committee be discharged.

It was then Resolved, That *this* Convention do adopt the fifth resolution reported by the Committee.

The following resolution was then presented by Mr. Copeland, and laid upon the table: "That it be very respectfully recommended to the Legislature to cause a topographical, and, if of sufficient importance, a geological survey of the State, or as much of it as may not already have been surveyed, for the purpose of having before them such information of a definite character, as will enable them to form a just estimate of the wants of every section of the State."

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*Preserving Scythes, &c., from Rust.*—To preserve scythes, reaping hooks, and other steel tools from rust, after the season for using them, wipe them clean and dry, and hold them before the fire, and keep drawing them backwards and forwards until warm enough to melt wax; then take some bees' wax and rub it all over. A half-penny worth of wax will be sufficient for a scythe. Then put it a dry place, but not warm; it needs no other covering. The usual method is to wrap a hay-band round; but in winter time this naturally contracts moisture, or the damp air strikes in betwixt the folds of the hay-band.—*Farmer's Magazine.*

✓ *Engineer's Report to the New-York and Albany Railroad Company.—*

*E. F. JOHNSON, Chief Engineer.*

*To the President and Directors of the New-York and Albany Railroad Company:—*

GENTLEMEN—The following statement of the results of the surveys made between the cities of New-York, Albany and Troy, for determining the route of the New-York and Albany Railroad, is respectfully submitted:—

The route, as surveyed, commences on the north bank of the Harlem river, at a point from which a convenient entrance may be made into the city of New-York, either by the Harlem Railroad, or such other route as may be preferred.

From thence it proceeds north, through the county of Westchester, occupying for the first 35 miles nearly middle ground between the Hudson river and the waters of Long Island Sound.

From the North line of Westchester county, it passes through the Eastern part of Putnam and Dutchess counties—through the centre nearly of Columbia county, thence to the town of Greenbush, opposite Albany, and also to Troy, in Rensselaer county.

The profile of the route presents two principal summits, one near the centre of Westchester county, the other in the North East part of Dutchess county.

The lowest point of depression between the two is situated in the valley of the Croton river.

The ascent to, and descent from these summits is very gradual, not exceeding, at any one point, 30 feet per mile,\* the steeper grades being confined to about four-tenths of the distance. The remaining six-tenths varying from a level to 25 feet per mile.

The average rate of ascent and descent to and from these summits, is as follows:—

Harlem river to first or lowest summit, 26 miles, 16 feet per mile, ascending.

First summit to the valley of the Croton, 12 miles, 20 feet per mile, descending.

Valley of the Croton to second summit, 54 miles, 10½ feet per mile, ascending.

Second summit to the Hudson river at Albany, 48·7 miles, 16 feet per mile, descending.

The line from the Harlem river traverses successively portions of the vallies of the Bronx, Croton and Ten Mile rivers, the latter of which is a tributary of the Housatonic. It traverses also the vallies of Ancram creek, and of Cline Kill, a branch of the Kinderhook creek. From thence it passes over the Kinderhook and Schodac plains to the termination opposite Albany.

The course of the line, as will appear by an examination of the map, (which has been executed, on a large scale, by Mr. E. S. Coe,)

\* The line of the survey terminates at the upper ferry, opposite Albany. If the lower ferry is selected as the place of termination, the maximum grade will probably be somewhat increased at that point, and the total distance lessened about two-thirds of a mile.

is quit direct—there being but one departure from a generally straight course. This deviation occurs in Columbia county, by which the line at that point is thrown in nearer to the Hudson river, a circumstance deemed rather favorable than otherwise, as it affords the means of connecting by a very short line with the Catskill and Canajoharie Railroad, and also with the city of Hudson; while at the same time the route inclines in its course south, sufficiently near to the boundaries of Connecticut and Massachusetts, to secure to the road the travel and business from the Western portions of those States.

The whole distance by the line, as surveyed from the City Hall in New-York to Albany, is 147.71 miles; no greater, it is believed, than the distance between the same points by the channel of the Hudson river. Notwithstanding, therefore, the route is situated, for most of the distance, from 15 to 25 miles from the river, the course which it pursues is quite as direct as by the river, a conclusion confirmed by the fact that the radii of curvature upon the line of the Railway are large, exceeding, with two exceptions, 1,500 feet, so large as to occasion, from considerations of safety, no necessity for any material reduction in the speed. In respect to straightness, it is ascertained that the proportion of straight to curved line is as seven to three—only three-tenths of the entire distance being curved. This is only six per cent. greater than the proportion upon the Utica and Schenectada Railroad, which is straighter than the majority of Railroads in the northern section of the Union.

The traveller upon the Hudson river, or by the post road on its eastern side, derives no correct idea of the true features of the country as they exist along the proposed route of the Railroad.

The highlands which appear so formidable from the river, are intersected by the Railroad in their north-easterly course into Massachusetts and Vermont, 50 miles from the place where they are divided by the Hudson river, and are there passed through a depression elevated 769 feet above tide, being the highest of the two principal summits to which reference has been made.

The deep ravines and precipitous banks which appear in many places along the eastern slope of the Hudson river valley, and which from their unfavorable direction, would present serious obstacles to the construction of a Railway in the vicinity of the river, are all avoided by the line as surveyed.

The maximum grade of 30 feet per mile upon the road can be overcome with locomotive steam power, at a speed of 12 miles per hour, with a load of 100 to 150 tons, equal to that which can be conveyed on a level at 20 miles per hour. As it is seldom, however, upon roads doing a large passenger business, that the engine is loaded to the full extent of its power, the average velocity in ascending the maximum grade will probably not fall much short of the velocity upon the level. Whatever is lost, will be easily made up upon the descending portions of the line, which are not so much inclined as to make it unsafe to take advantage of the aid afforded by gravity in compensating for the diminution of the velocity upon the ascending portions.

It is a very favorable feature in the profile of the road, when considered in reference to the expense of transportation upon it, that the bulk of the transportation occurs upon the longest portion south of the highest summit, where the line has a general average descent to New-York city, of about eight feet per mile, in a direction favorable to the preponderance in the trade.

The character of the road in respect to the maximum grade, which limits the load of the engine, will be better understood by a comparison with other roads which are in operation, as general throughfares of trade and travel. The maximum grade is 20 per cent. less than upon the Boston and Providence road; 12 per cent. less than upon the Stonington road;  $33\frac{1}{2}$  per cent. less than upon the Camden and Amboy road; 40 per cent. less than upon the Philadelphia and Columbia road; 25 per cent. less than upon the Harlem road, where steam power is used. No greater than upon the Boston and Worcester, Auburn and Syracuse, New Castle and Frenchtown, and New-Jersey roads. Only eight feet per mile greater than upon the Utica and Schenectada road, and only the same amount greater than the maximum grade on what is usually termed the *level* portion of the Mohawk and Hudson road between the inclined planes.

It is, I conceive, an important feature in the New-York and Albany road, that it is located wholly within the limits of New-York. It had been supposed from representations, in which great confidence was placed, previous to the examination made by Mr. Morgan on the northern portion of the line, that a route for a railway could not be found within the limits of the State, without encountering an elevated summit, to pass which would require the construction of a tunnel, or a resort to inclined planes, either self-acting, or operated by horse or stationary power. Under this impression, attention was directed to a route passing through a portion of Connecticut and Massachusetts. By this latter route, the distance and expense, and acclivity of grades, would have been considerably increased, compared with the line as now surveyed. By avoiding this route, from 350 to 380 feet vertical rise is saved in the elevation of the main summit; and the line is relieved from the expense and embarrassment attending its construction and operation, consequent upon its being composed of different portions located in three different States, under the authority of charters obtained from each.

Pursuing as the line does in its course from New-York to Albany, a succession of vallies for most of the distance, and for the remainder traversing the comparative level surface of the Kinderhook and Schodac plains, great facilities exist for the construction of a cheap and permanent road. Although there are a few points requiring more than ordinary expenditure, one in descending from the level of the Schodac Plains to Greenbush, another small portion in the towns of Ghent and Claverack, and another in Westchester county; yet, there are none requiring excessive expense, such as are frequently met with upon public works of a similar character. I allude now to tunnels, either in earth or rock—deep and extensive excavations through rock, long and heavy embankments, &c. The streams also are not large, and with the exception of the Harlem river, require no expensive bridges, or heavy slope walls to protect the road from injury by floods.

Sione for the masonry and timber for the sills and cross ties of the superstructure or rail track, including most of the materials necessary for the construction of the road, with the exception of the rail plates and rail timbers, can be obtained of an excellent quality from the section of country through which the road passes. The iron for the rails or rail plates being imported free of duty, is procured at less expense from abroad. The rail timbers, should the plan of construction require them, can be obtained either from the South or from the North and West. The line of the road, for most of the distance, passes over the more level ground near the bot-

toms of the vallies. South of the main summit, limestone, and granite, and gneiss rock, is encountered occasionally in the excavations; north of that summit, slate rock is met with in several places. The excavations in earth are composed principally of gravel, sand, and loam, the two first predominating over the last.

The excavation on the whole line is very similar in its general character to what appears on the six miles which have been put under contract near the Harlem River, and which for the grading and masonry for a single track, will not exceed, according to the terms of the contract, \$5000 per mile.

A detailed estimate of cost of the whole line will be found embraced in the annexed reports of Messrs. J. I. Shipman and R. P. Morgan, Resident Engineers—by which it appears that the clearing, grubbing, ditching, grading, masonry, bridging and fencing upon Mr. Shipman's division, embracing the county of Westchester 42.38 miles, amounts to, including ten per cent. added for superintendence and contingencies, \$508,753 16 The same for the portion surveyed by Mr. Morgan, extending from the north line of Westchester county to Greenbush, opposite to Albany, a distance of 9S 1.3 miles, amounts to 907,253 60

Total for the whole line,	\$1,416,006 76
Giving per mile,	\$10,063 30

For the railway or superstructure for a single track, the cost per mile for timber rails, surmounted by iron plates, of the proper thickness, with a timber foundation, similar to the Utica and Schenectada Railroad, will amount to \$5300, or for 140.71 miles,	\$745,763 00
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Total,	\$2,161,769 76
Add for turns out 10 per cent.,	216,176 98

Total for grading and superstructure for 140 71 miles,	
Or per mile,	\$16,899 63      \$2,377,946 74

This estimate does not of course include the expense of lands, and damages to buildings, neither does it embrace any of those items which belong to the transportation account, such as warehouses and fixtures at the depots, engine houses, engines and carriages.

Should an entire iron rail be adopted, the cost will be enhanced about \$3600 per mile, and should it be determined to grade for a double instead of a single track, the cost would be still further enhanced about \$2100 per mile.

On this subject, I would remark that the capacity of a single track railway for transportation, when provided with suitable turns out, is very great. This arises in a great measure from the degree of perfection which has been attained in the construction and operation of the locomotive engine, by which its powers for traction and speed are so well understood and regulated, that its times of arrival and departure, and of passing particular points upon a road with grades as favorable as the N. York & Albany, can be determined with a great degree of precision.

As it regards the probable revenue, data cannot be obtained for forming as correct a statement as in the estimate of the expense. It has been already stated that the route of the New York and Albany Railroad, passes for some distance near to and parallel with the west line of Connecticut, and near the south west part of Massachusetts.

The counties through which the route passes, viz: Westchester, Put-

nam, Dutchess, Columbia, and Van Renssalaer, are among the richest in agricultural, manufacturing and mineral resources in the State. They also contain a very dense population, numbering according to the last census in the aggregate 197,306 inhabitants, equal to one tenth part nearly of the population of the state.

If to this be added the population of the counties of New York and Kings at the South, and Albany, Schenectada, Saratoga and Washington, at the North, all of which are in the immediate vicinity of the route, and will furnish to it more or less business, the aggregate is 652,782, equal to the one third part nearly of the whole population of the state. The preceeding is exclusive of those portions of Connecticut and Massachusetts, situated near the route, and which, if they do not present so dense a population, are rich in manufacturing and mineral resources, embracing in addition to many valuable beds of iron ore, the finest marble region in the United States.

The position of the main line of the Road is such that branches can easily be extended into the western part of Connecticut and Massachusetts to connect with the line of Eastern rail roads from New Haven and the Great Western railroad from West Stockbridge, to Springfield and Boston. These lines of railroad are now partially in operation, and will soon be completed. The line from Boston to Worcester has been for some time in operation. From Worcester through Springfield, to the west line of Massachusetts, it is now mostly under contract, and will speedily be completed under the efficient aid afforded by the state of Massachusetts. From Springfield to Hartford, along the Connecticut river valley, surveys are now being made, and as the distance is short, and the ground favorable, the time cannot be distant when this portion will be in a course of construction. From Hartford to New Haven, the line is one half in operation, and the remainder under contract, and public attention is now being directed to the construction of the only remaining link required to complete the chain of coastwise railway communication from Maine to Carolina,—I allude to the portion between New Haven and New York. The navigation upon the Sound from New York to New Haven, and intermediate places, being generally safe and available most of the year, renders less necessary, perhaps the immediate construction of this line, but that it will sooner or later be opened, and if properly located, will occupy some thirty or more miles of the New York and Albany railroad, there is not, from the best information I have been able to obtain, much doubt.

In a communication made to the President and Directors of the New York and Erie Railroad Company during the last session of the Legislature, I urged the necessity in view of the great and constantly increasing importance of New York City as the leading commercial emporium of the union of *continuous* lines of railroad extending from the city to the northern and western lakes, and to the navigable waters of the Ohio. The New York and Albany railroad holds a prominent rank in this system, being the main stem or trunk to the branches leading north and west to the lakes, along one of the greatest thoroughfares for trade and travel in the United States.

These branches are now nearly perfected; but one link is wanting from Saratoga to Whitehall, to complete the connection with Lake Champlain. One only from Utica to Oswego to complete the connection with Lake Ontario, and if we except the Utica and Syracuse and Auburn and Rochester railroads, which are both in a course of construction, one link

only is wanting from Batavia to Buffalo to complete the connection with Lake Erie.

The inquiry will naturally be made as to how much of the business furnished by these branches will be contributed to the New York and Albany road. There cannot be much doubt that during the winter season the New York and Albany road is destined to become the main channel for the immense travel and trade of the country west and north of Catskill and Albany, including both the Canadas, with much to the east of those places, embracing the western portions of Connecticut, Massachusetts and Vermont.

During the season of navigation upon the Hudson River, the bulk of this business will, it is presumed, continue as heretofore, to be borne upon its bosom. Considering, however, the vast accumulation of the business and travel between New York and Albany at this season, it will not be unreasonable to assume that some portion of it will be diverted to the railroad, more especially if a saving in time is effected, as it easily may be upon the Railroad, of from two to four hours, compared with the time hitherto occupied by the fastest boats in passing between New York and Albany.

To the accessions from this source must be added the way travel and trade, which, for so extended a line, passing through so populous and wealthy a region, must of itself afford a revenue sufficient nearly to sustain it. For important information upon this subject, of a statistical character, I refer to the Report of the Executive Committee, recently made, and also to a pamphlet containing valuable "facts and suggestions," illustrative of the importance of the New York and Albany Railroad, by W. C. Redfield, Esq., of New York city, a gentleman who has contributed largely to promote the cause of internal improvements.

Perhaps no more satisfactory opinion can be formed of the business prospects of the New York and Albany Railroad, than by a comparison with the Utica and Schenectada Road, which forms a part of the same line to the lakes, the stock of which ranks among the most stable and valuable of any in the market.

During the season of suspended navigation on the Hudson, it will be obvious, from what has already been stated, that the business upon the New York and Albany Railroad will probably be greater than upon the Utica and Schenectada, as it will receive in addition to what is furnished by that road, all that will naturally concentrate upon it from the North and East. In addition to this, the New York and Albany Road possesses the privilege of carrying freight, which has thus far been denied to the Utica and Schenectada and other roads in the vicinity of the Erie canal. That this restriction, under a more enlightened view of the subject, will be removed, so as to permit the Utica and Schenectada, and the other roads mentioned, in the same line, leading west to Buffalo, to carry freight free of tribute to the State, I do not doubt; and have as little doubt also, that when the restriction is removed, and the line of Railway is completed to Buffalo, with the necessary arrangements for carrying freight, that even during the season of navigation, notwithstanding the cheaper transportation by the Canal, merchandise will be transmitted by the Railroads to a very considerable extent. This opinion is based upon the circumstance that to the States and Territories west, rapidity of transit is of the greatest importance, as is evinced by the fact that the Steam-vessels upon the lakes, notwithstanding the charges are higher than in Sail-vessels, are now doing the greater portion of the freighting business.

The New York and Albany road, situated as it is, from fifteen to twenty.

five miles from the Hudson river, will command in summer, as well as in winter, an amount of freight which will add greatly to its revenue.

That freight can be transported upon Railroads at all seasons, with little danger of interruption, is now satisfactorily proved.

On several leading Railroads in the country, particularly the Boston and Worcester, and Philadelphia and Columbia, both of which are great thoroughfares for travel, the total annual receipts from freight are nearly equal to the receipts from passengers.

With an equal amount of business, the cost of transportation per ton, or per passenger per mile, will be less upon the New York and Albany, than upon the Utica and the Schenectada road, in consequence of the greater length of the former. The superiority of the latter over most other roads, is, owing in a great degree to the economy in transportation, resulting from its great length, 78 miles, being the longest Railroad in operation, with the exception of the Philadelphia and Columbia, in the Northern States. A very limited addition to the number of engines, carriages, superintendents, &c., on the Utica and Schenectada Railroad, would probably suffice to do an equal amount of business upon the New York and Albany road. The intelligent Directors of the Utica and Schenectada, and Utica and Syracuse Railroads, appear to be fully aware of the importance of this fact, as I understand that an arrangement has been made, by which the engines and carriages of the former company are to traverse the whole extent of both roads, 131 miles, an arrangement which I do not doubt, will be of great advantage to both companies. The superiority which long lines of railway possess over short ones, in the economy of transportation, is abundantly manifest in the experience upon the Mohawk and Hudson Railroad—it having been ascertained that the cost of transportation upon that road, exclusive of the expense of stationary power at the inclined planes, is but little less than the total cost for a level road of twice or perhaps three times the extent.

Upon the Utica and Schenectada Rail road, as upon most other roads, the way-travel forms a prominent part of the business which is transacted upon it. In the year 1837, the number of *through-passengers* on this road, amounted to 79,000; and the number of *way-passengers* to 60,000.

Upon the New York and Albany Railroad, the intercourse between all parts of the line and the city, will necessarily be frequent, from the contiguity of the latter, and as it has a greater population in proportion to its length to sustain it, it is reasonable to infer that the way travel will be in a corresponding degree augmented.

Isolated Railroads, limited in extent, do not afford facilities sufficient to induce travelling to any great extent in winter. In proportion, however, as the Railroad system is extended, the travel will be increased, particularly in winter, in consequence of a large portion of the population being more at leisure at that season. Every new road that is constructed where there is no direct collision, adds to the business of those already in operation.

The population of the country is rapidly increasing; this is another important cause operating to increase the travel and business upon Railroads.

The New York and Albany Railroad is likewise essential to the rapid transmission of the mail at all seasons, and as affording a cheap and easy communication from the capital of the State to New York city, and intervening places, during the session of the Legislature.

The preceding are some of the more important reasons for supposing that the New York and Albany Railroad, when completed, will take a high rank among the leading public works of the State.

Important as this work is, in continuing to the city of New York the chain of Railroad communication, now so nearly perfected, from Albany and Troy, North and West to the Lakes, it is deserving of particular attention and support, by all who are interested in the growth and prosperity of the city. This attention and interest is more particularly demanded at the present time, in consequence of the efforts making to reach Albany by Railroads, from other sea-ports in the states of Connecticut and Massachusetts.

I cannot better, perhaps, close this report than by quoting the following from the communication to which I have already alluded, as having been but recently made to the President and Directors of the New York and Erie Railroad Company :

"While other cities upon the sea-board, Boston, Philadelphia and Baltimore, have opened to themselves railway communications, extending into the interior, by which supplies of provisions, fuel, &c., can be procured at all seasons, New York is, as yet, unprovided with any such communication.

"From the period of the closing of the canals to the opening of the navigation in the Spring, embracing more than one-third of the year, she is dependent mainly for her supplies upon the accumulation during the season of navigation, and the contributions of the adjacent country, which are usually reserved to the period when they will command the highest prices.

"The opening of a *continuous* line of Railway, leading into the fertile regions of the interior, will remedy, to a very considerable extent, this evil, and serve to prevent the existence of those monopolies which so easily spring up under the present limited sources of supply, and which will continue to be more severely felt in proportion as the population of the city and the adjacent county is augmented.

"The great interest possessed by the city of New York in the construction of the New York and Albany Railroad, necessarily induces a reciprocal interest on the part of those portions of the interior of the State, which are so situated as to be able to avail themselves of the road when constructed.

"The benefits accruing to those portions, in being able to communicate with the city at all seasons, with the great additional value which the road will impart to the lands and other property wherever its influence shall be felt, cannot, from their magnitude, be easily calculated. As a public enterprise, in this view alone, it will richly repay to the people of New York, any favors it may receive at their hands, in aid of its construction."

EDWIN F. JOHNSON,

Chief Engineer of the New York and Albany Railroad.  
NEW YORK CITY, December, 1838.

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*Southern Division—Report of J. I. Shipman.*

OFFICE OF THE NEW-YORK AND ALBANY RAILROAD CO.  
December 28, 1838.

To E. F. Johnson, Esq. Chief Engineer N. Y. & A. R. R. :—

SIR—I have the pleasure to present to you a report, or general description of the operations of the Engineer Department on the lower division of the New-York and Albany Railroad, with maps and profiles illustrating the same, also a detailed statement of the various grades and curves upon one of the principal routes examined; together with an approximate estimate of the cost of graduation and masonry.

The survey of the lower division was commenced on the 14th of July, 1838, at a point on the northern bank of Harlem river, nearly opposite the termination of the Fourth Avenue of the city of New-York, in which the Harlem Railroad is located. From thence it was continued in a northerly direction to the valley of Mill Creek; crossing this stream, about two miles from the Harlem river, with a culvert of twelve feet span, and thence along its eastern bank to its source, a distance of four miles.

The general character of the valley of Mill Creek is favorable for the economical construction of a railroad, being, with the exception of a little rock cutting on the Eastern face of the ridge near Harlem river, chiefly composed of sand and gravel, and admitting of a very moderate grade, with curves of large radii.

From Mill Creek Valley, the route crosses the dividing ridge at an elevation of 22·04 feet above tide water, with a very moderate excavation, principally gravel, to the valley of the Bronx river, which it crosses upon a short embankment, and a bridge of twenty-five feet span, fourteen feet above the stream. From the latter point it continues on a generally direct course along the valley of the Bronx, a distance of twenty miles. This valley, near the stream, is composed of a broad level flat, three feet above the bed of the stream, averaging about five hundred feet in width. This bottom level or flat is skirted on both sides by a table land composed of gravel, and rising abruptly about thirty feet above the flat, averaging about two hundred feet in width. From this limit, the ground rises gradually on either side to an elevation above the stream, varying from one to three hundred feet. Upon the table land mentioned, the line was traced; the whole route admitting a moderate grade, averaging 17 feet per mile, and not exceeding 30 feet per mile. When rock occurs, which it does at a few points, it is chiefly granite and gneiss. Two quarries of marble are found upon the ridges above the table land—and stone for culverts and other purposes may be obtained within reasonable distances. Passing the dividing ridge between the waters of the Bronx and Kisto rivers, at an elevation of 443·5 feet above tide, by a moderate excavation, the route continues on side lying ground, northerly to the plains of New Castle. From thence it follows the valley of Muddy Brook, by a descending grade to the valley of Cross river, at Jay's meadow. This valley is similar in character to the valley of the Bronx; the Cross river is passed by a bridge of 40 feet span, elevated 30 feet above the water. From the Cross river, the course of the line continues very direct, and traverses a series of gravel knolls, with very moderate excavations, and embankments, to the valley of the Croton river, near the residence of J. H. Purdy, Esq., at which place it will be necessary to change the course of the stream for a short distance. Thence the line proceeds along the Croton river valley, crossing the Titicus river fifteen feet above the stream, on a bridge of 20 feet span, to the Putnam county line, being a distance of 42·383 miles from Harlem, and 257·92 feet above tide.

For the more perfect illustration of this route, I refer to the Map and Profile designated A.

A line diverging to the left at station 1068, near Davis' Brook, in and following the valley of that stream to the valley of the Saw Mill river, and connecting with the route yet to be described, in the valley of that stream, was examined, and presents favorable features, which will merit consideration in deciding upon the final location of the road.

A line diverging from the main route near Robbins' Mill, and passing through the villages of Mile Square, Bedford, Cross river and North Salem,

to the Putnam county line, and connecting with the main line at Milltown, 48 miles from Harlem, as also a line by way of Hardscrabble to Doanesville, was carefully examined, and it is believed that the data necessary for a proper decision of the question of location in that quarter are fully obtained.

A third deviation from the main line was made near Whitlockville, in a more easterly direction, by the valley of Cross river, through North Salem, which completes the eastern portion of the survey.

The western portion of the survey commenced at the same point on Harlem river, described in this report, and continuing on the North bank of the river, passes up the valley of Tibbett's brook, and forms a junction with a very feasible route, by way of Sprain brook, leading from the valley of the Bronx river, by an easy grade and light excavation, to the valley of the Saw Mill river. This latter valley is of the same general character with the valley of the Bronx, except that the course is less direct. At Unionville this line unites with the route from Davis' brook, 22 miles from Harlem. From this junction the route pursues the valley of the Saw Mill river to its source, and passing through the Dead Swamp, and the valley of the Kisto, it reaches the summit at Muddy Brook, and thence by a descending grade to the valley of Cross river, to connect with the central, or main line.

The character of the central route, as to grade and curvature, is exhibited in the following tables. It is upon this route only, and its modifications, that the estimates of cost are presented, there not being time sufficient allowed to enter into a minute examination and calculation of the expense upon the other routes.

Notwithstanding the distance from the Harlem river to the northern termination of the survey is only 43 miles, yet the whole extent of line surveyed, in making the examination, amounted in the aggregate to about two hundred miles.

To Mr. A. A. Goodliff, my principal assistant, together with the other members of the corps, I am greatly indebted for the energy and skill which they evinced in the execution of the surveys.

Respectfully submitted,

J. I. SHIPMAN,

*Resident Engineer.*

#### *Southern Division.—Estimate of Cost of Graduation.*

##### SECTION, No. 1.

Extends from Harlem River to the line between the towns of East and Westchester, being 6.532 miles.

Excavation and haulage, common earth,				
cubic yards,	127,788,	a	18 cts.	22,992 86
Do. do. Rock,	4,000,	a	\$1 00,	4,000 00
Masonry in 8 culverts,	200,	a	\$3 00,	600 00
Do. Road Bridge, 20 ft. span,	285,	a	3 00,	855 00
" " over Bronx,	218,	a	4 00,	872 00
Superstructures do.				720 00
Excavation in pits,	500,	a	30 cts.,	150 00
Fencing,	2,184,	a	1 25,	5,225 00
Grubbing and clearing,	11½,			675 00
				<hr/>
				\$36,089 86

## SECTION, No. 2,

Extends from East and Westchester town line to the line between Scarsdale and White Plains, 10.227 miles.

## Excavation and haulage of common

earth, cubic yards,	318-172, a	18 cts.	\$57,270 96
Do. do. Rock, cubic yds.	35-000, a	\$1 00,	35,000 00
Masonry in 15 culverts,	" "	667, a	3 00, 2,001 00
Excavation in pits,	" "	600, a	30 cts. 180 00
Grubbing and clearing, acres,	28,		1 320 00
Fencing, rods,	6545, a	1 25,	8,181 25

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\$103,953 21

## SECTION, No. 3,

Extends from Scarsdale and White Plains town line to the line between Mount Pleasant and Newcastle, 8.997. miles.

## Excavation and haulage common earth,

cubic yards,	457-502, a	18 cts.	\$82,350 36
Do. do. Rock, cubic yards,	14-208, a	\$1 00,	14,208 00
Masonry in 19 culverts,	" "	1-082, a	3 00, 3,246 00
" Bridge over Bronx,	" "	300, a	4 00, 1,200 00
" Road Bridge,	" "	270, a	3 00, 810 00
Excavations in pits,	" "	1-340, a	30 cts. 402 00
Superstructures do.			740 00
Grubbing and clearing,	acres,	15½,	712 50
Fencing,	rods,	5-758, a	1 25, 7,197 50

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\$110,866 36

## SECTION, No. 4,

Extends from the line between Mount Pleasant and Newcastle to the line between Bedford and South Salem, 8.484 miles.

## Excavation and haulage common earth,

cubic yards,	592-792, a	18 cts.	\$106,702 56
Do. do. Rock, cubic yards,	12,000, a	\$1 00,	12,000 00
Masonry in 20 culverts,	" "	1-094, a	3 00, 3,282 00
" Bridge over Cross river "	600, a	4 00,	2,400 00
Excavation in pits,	" "	1-100, a	30 cts. 330 00
Superstructure,			760 00
Grubbing and clearing,	acres,	14½,	750 00
Fencing,	rods,	5430, a	1 25, 6,787 50

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\$133,012 16

## SECTION, No. 5,

Extends from Town Line, between Bedford and South Salem, to the Putnam County Line, 8.144 miles.

## Excavation and Haulage common earth,

cubic yards,	382-067, a	17 cts.	\$64 951 39
Do. do. Excavation, Rock, cub. yds.	2000 a	\$1 00	2,000 00
Protection wall,	" "	500 a	1 00 500 00
Masonry in ten culverts,	" "	457 a	3 00 1,371 00

## New-York and Albany Railroad.

" Bridge over the Titicus, "	300	a	4 00	4,200 00
" in two large culverts, "	222	a	3 00	666 00
Excavation in pits, "	1,120	a	30	836 00
Superstructure to Bridge, . . . . .				310 00
Grubbing and clearing, . . . . .			acres 15	732 00
Fencing, . . . . .	Rods 5280	a	\$1 25	6,515 00

\$78,581 39

## AGGREGATE OF THE SECTIONS.

No.	Distance Miles,	Amount.
1	6.532	\$36,089 83
2	10.227	103,953 27
3	8.997	110,866 36
4	8.484	133,013 06
5	8.144	78,581 39

\$462,502 88

Add for superintendence and contingencies,  
10 per cent. . . . . 46,250 28

\$508,753 16

Average per mile, \$12,003 71

## TABLE OF GRADES,

Commencing at Harlem river, and terminating at Putnam County  
South Line.

Distance from Har- lem, in miles.	Length of Grades in miles.	Inclination.		Elevation at change of grade above tide.
		Grade per mile in feet.	Direction.	
0.454	0.454		Level	5 000
1.022	0.568	30	Ascent	22 040
1.514	0.492	15	Descent	14 660
3.787	2.273	8	Ascent	32 844
4.772	0.985	25	do	57 469
6.439	1.667		Level	" "
8.749	2.310	9	Ascent	78 259
9.849	1.100	15	do	94 759
10.607	0.758	9	Descent	87 937
11.516	0.909	30	Ascent	115 207
13.637	2.121	11	do	138 564
15.379	1.742	27	do	185 598
17.046	1.667	9	Descent	170 571
25.909	8.863	29	Ascent	427 598
26.572	0.663	24	do	443 510
30.549	3.977	26	Descent	340 108
31.306	0.757	8	do	334 152
36.173	4.867	30	do	188 142
36.968	0.795	30	Ascent	211 992
37.668	0.700	20	Descent	197 992
39.126	1.458	15½	Ascent	220 591
40.000	0.874	20	Descent	203 111
40.556	0.556		Level	" "
42.383	1.827	80	Ascent	367 921

## RECAPITULATION OF GRADES.

2-677	miles	Level,	
7-765	"	Level to 10 feet per mile,	
6-745	"	10 to 20	" "
1-648	"	20 to 25	" "
23-548	"	25 to 30	" "

Extent of curved line from 1432 to 6000 feet radius 3-431 miles.  
 " " " 6000 and over, 8-050 "

Total curvature, 6-481 "  
 Straight line, 35-902 "

Total distance Southern Division 42,383 "

To be continued.

*Camden and Amboy Branch Railroad.*

We wish every "Friend of Internal Improvement," would furnish us with a statement similar to the following, in relation to works of which they can speak from knowledge:

For the Railroad Journal and Mechanics' Magazine.

SIR:—I will take the liberty, through the medium of your Journal, to state that the Camden and Amboy Branch Railroad, between Trenton and New Brunswick, is completed, and has been in successful operation since the first instant.

This is, perhaps, one of the most important works in the Union, forming a direct Railroad communication between the two *rival* cities of New York and Philadelphia, connecting with the East Jersey Railroad at New Brunswick, and the Philadelphia and Trenton Railroad, at Trenton.

The road from Trenton to Kingston, is constructed on the south-eastern bank of the Delaware and Raritan Canal. At Kingston it leaves the Canal to the north, following the valley of Heathcotes brook, a distance of about four miles, to Long Bridge farm; here it takes the valley of Lawrence brook, following it to Dean's mill pond, a distance of about 2½ miles; it here takes the valley, and crosses the table land to New Brunswick.

The grading of this road was commenced on the 4th of June last, being only 6 months and 26 days before the entire completion of the work. This is unquestionably the shortest period ever occupied in constructing any Railroad of an equal length.

The superstructure is composed of a T rail, the same as that used on the Camden and Amboy Railroad, 16 feet long, resting on 9 cross ties, 8 of which are Oak or Chestnut, the joint tie being Locust, resting on 2 stone blocks, which are under the rail, and firmly bedded in the ground; the rails are connected together at the joints by a cast iron chair, which also prevents the rail from slipping.

The distance from Trenton to New Brunswick, by this route, is 27 miles, passing through a very pleasantly diversified country.

For the completion of the work, the public are indebted to the scientific and enterprising Chief Engineer, WILLIAM COOK, Esq., by whose untiring zeal and unremitting attention the work was so speedily finished.

A FRIEND TO PUBLIC IMPROVEMENT.

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*American Locomotives in England.*

It is with feelings of the highest gratification that we place on record the order for ten large engines, to be made by our enterprising friend, Norris of Philadelphia, for the Birmingham and Gloucester Railway.

On the receipt of one of Mr. Norris's circulars, by the distinguished Engineer of this road, a correspondence was opened, which resulted in a contract for *seven* of the class designated B, by Mr. N., and for *three* of a larger size than his class A.

We understand that the first of these will be shipped on the 15th of February, and that the others will rapidly follow, probably at the rate of two a month.

It is the intention of Mr. Norris to finish these engines in such a manner as to confirm the favorable opinion already existing of his work.

No more triumphant instance of the degree of excellence attained in machine-making, in this country, could be given, and we predict that the exportation of American Locomotives to England will soon be more common than the importation of English Engines to this country.

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*New Haven and Hartford Rai'road.*—We understand that this Road is now in successful operation as far as Meriden, 18 miles, and it is intended to be finished to Hartford by the first of November next.

The route from Hartford to Springfield is now under examination, a distance of 25 miles, making a direct line of Railroad from Boston to New Haven.

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*Extract of a Letter, dated Augusta, Ga. January 10, 1839.*

"The Georgia Railroad is now in operation a distance of 75 miles. The cost of the portion finished is about \$1,000,000. Our income from the Road last month, \$16,271, which is at the rate of 18 per cent. per annum. We shall have the Road finished to Greensborough, in March, when we expect our receipts will be \$24,000 per month."

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The tolls collected at the Pennsylvania canals from the 31st of October, 1837 to the 22d of October, 1838, amounted to \$400,441 90; on the railway and locomotive power during the same period, \$524,378 68: making a sum total of \$924,820 58.—*Argus.*

**Railway Signal.**—We have recently had an opportunity of inspecting a railway signal erected at the Grand Junction Station, Birmingham, which, from its great simplicity, and the unerring certainty with which it conveys the requisite information as to the state of the points to the drivers of locomotive engines, both by night and day, appears to be an invention highly important, not only to the proprietors of railroads, but to the public generally, as it will greatly tend to prevent those accidents which have occasionally occurred in consequence of the points (or shunts as they are called) being left in a wrong position. The invention consists of two discs, about two feet in diameter, placed at right angles, surmounted by a lantern showing four lights, but of three distinct colors, namely, two red, one blue, one white; the discs are painted to correspond. This apparatus is firmly attached to the top of the eccentric shaft employed in moving the points, and consequently turns with it with unerring certainty, and can be seen at a great distance, affording the enginemen or drivers ample time to govern the trains according to circumstances.

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**Railroad Switch.**—A young man of Morrisville, Bucks county, Pa., has invented a mode of changing the switch on the 'turn out' of a railroad, by which it is said all accidents may be avoided. A Philadelphia paper thus describes it:—"The management is left entirely with the engineer on the engine, and *not* with a person at the lever, by which the switch is moved. So, if the railroad is in order, the engineer may direct the train of cars either way at full speed, without the least danger of accident. A small wheel, disposable at the pleasure of the engineer, touches the bar before the switch is reached, and immediately the track is opened to the direction desired."

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**Raleigh and Columbia Road.**—The subscribers to the stock of this Road assembled at the office of the Raleigh and Gaston Company, on Monday last, for the purpose of organization. Col. Wm. Robards, of Granville, was called to the Chair, and Weston R. Gales appointed Secretary.

Judge Cameron, on behalf of the Commissioners appointed to open Books of Subscription, at Raleigh, made a written Report, stating that three hundred thousand dollars had been subscribed in the Stock of said Company; which being the amount required by Act of Assembly, to secure the Charter, and a majority of said Stock being here represented, the meeting, on motion of E. B. Freeman, Esq. proceeded to elect, by ballot, a President and five Directors to manage the concerns of the Company. The following gentlemen were found to have, each, a majority of the whole number of votes cast, and were declared duly elected, viz.: George W. Mordecai, President; Duncan Cameron, William Boylan, J. W. Hawkins, Charles Manly, and T. P. Devereux, Directors.

The Company then adjourned to meet again in this city on the first Monday in June, 1839.

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☞ The Iowa Gazette mentions that Government Engineers are now engaged in surveying a route for a railroad from Milwaukie to the Mississippi river, for which purpose an appropriation of \$20,000 was made by Congress at the last session.

**Railroad Dividend.**—The President and Directors of the Richmond, Fredericksburg and Potomac Railroad Company, out of the nett profits for the last six months, have declared a dividend of three and a half per cent. We are pleased to learn, (says the Richmond Compiler) that the income for this period has been about 50 per cent. more than it was for the same period last year. A year ago, the dividend was only four per cent. for the preceding twelve months. Now it is three and a half for six months.

☞ We now present number one, of volume two, new series, of the *American Railroad Journal and Mechanics' Magazine*, to our readers, and solicit a continuance and increase of patronage.

To those of our subscribers who have punctually performed their part of our mutual contract, we return our warmest thanks, for enabling us to continue our work in an improved form. If supported, we intend continuing to add to its value, by every exertion in our power. The character of a Journal depends so much upon its general distribution, that our readers will find it as much to their advantage as to our own, to promote the circulation of the work.

To those who have *patronized* us by reading our work and not paying for it, we have only to say, that, though we do it reluctantly, we are obliged to discontinue sending to them. We have adopted the rule, and we shall not hereafter depart from it. Our means are not adequate, even if our inclination were, to a gratuitous distribution.

It may be proper to remark, that our Clerk has no other guide, than the payment, or non-payment, for the last volume, in sending or stopping the next number. It may happen that some very good friends of ours may thus be stricken off our books. We assure them that there is no unkind feeling on our part, and that they can very speedily resume their places on our books, by remitting the amount due, and for the ensuing year.

We make these remarks, because we find that in a few instances offence has been taken at our sending a bill upon the cover. When the money is due, we send the bill, and place it in as conspicuous a situation as possible. If this needs apology, we do not feel disposed to make any; but if, by any omission on our part to give credit for money received, or by losses in the mails, the subscriber is not credited on our books for money remitted, we desire to be informed of the fact, that credit may be given.

☞ Mr. E. F. Johnson's communication in reply to Mr. Detmold has been in hand several days, but it is necessarily omitted until our next number, to make room for his Report on the New-York and Albany Railroad.